

IN THE CLAIMS:

A complete listing of all the claims is presented as follows:

Claim 1. (Currently Amended).

A process for preparing an enantiopure or enantioenriched substituted 1,3-dioxolan-4-one ~~derivative~~ or an enantiopure or enantioenriched substituted 1,3-oxathiolan-5-one ~~derivative~~, which comprises

bringing a mixture containing a substance selected from the group consisting of ~~an enantiomeric~~ a racemic 1,3-dioxolan-4-one ~~derivative~~ and ~~an enantiomeric~~ a racemic 1,3-oxathiolan-5-one ~~derivative~~ and an enzyme with hydrolytic activity into contact ~~in the presence of~~ with an effective amount of a nucleophile to effect the biotransformation; cleaving a ring of one enantiomer selected from the group consisting of the 1, 3-dioxolan-4-one ring and the 1,3-oxathiolan-5-one ring by the enzyme with hydrolytic activity; and

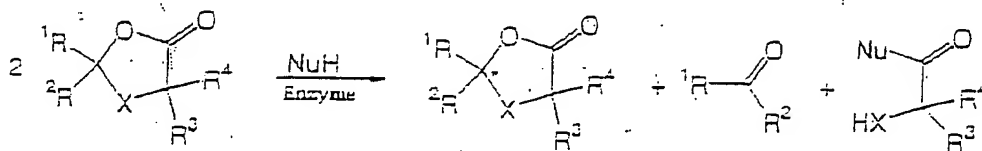
after the cleaving of one enantiomer has taken place, isolating ~~an~~ the uncleaved enantiomer selected from the group consisting of the 1,3-dioxolan-4-one ~~derivative~~ and 1,3-

oxathiolan-5-one derivative.

Claim 2. (Currently Amended).

The process as claimed in claim 1,

wherein ~~the~~ a mixture containing a substance selected from the group consisting of the ~~enantiomeric~~ racemic substituted 1,3-dioxolan-4-one derivative and the ~~enantiomeric~~ racemic substituted 1,3-oxathiolan-5-one derivative is cleaved by means of an enzyme which is able to cleave an ester linkage in the presence of a nucleophile (NuH) as depicted in the equation,



~~Equation 5~~

where X = oxygen or sulfur and

the radicals  $R^1$  and  $R^2$  are different and are selected independently of one another from the group consisting of H, substituted or unsubstituted  $C_6-C_{18}$ -aryl, substituted or unsubstituted  $C_3-C_{18}$ -heteroaryl, substituted or unsubstituted  $C_1-C_{18}$ -alkyl, substituted or unsubstituted  $C_2-C_{18}$ -alkenyl, substituted or unsubstituted  $C_2-C_{18}$ -alkynyl, substituted or unsubstituted  $C_6-C_{18}$ -aryl- $C_1-C_{18}$ -alkyl, substituted or unsubstituted  $C_3-C_{18}$ -heteroaryl- $C_1-C_{18}$ -alkyl, substituted or unsubstituted  $C_6-C_{18}$ -aryl- $C_2-C_{18}$ -alkenyl, substituted or unsubstituted  $C_3-C_{18}$ -heteroaryl- $C_2-C_{18}$ -alkenyl, substituted or unsubstituted  $C_1-C_{18}$ -alkoxy- $C_1-C_{18}$ -alkyl, substituted or unsubstituted  $C_1-C_{18}$ -alkoxy- $C_2-C_{18}$ -alkenyl, substituted or unsubstituted  $C_6-C_{18}$ -aryloxy- $C_1-C_{18}$ -alkyl, substituted or unsubstituted  $C_6-C_{18}$ -aryloxy- $C_2-C_{18}$ -alkenyl, substituted or unsubstituted  $C_3-C_8$ -cycloalkyl, substituted or unsubstituted  $C_3-C_8$ -cycloalkyl- $C_1-C_{18}$ -alkyl, substituted or unsubstituted  $C_3-C_8$ -cycloalkyl- $C_2-C_{18}$ -alkenyl, and substituted or unsubstituted  $CR^8R^9-O_n-(CO)_m-R^{10}$  and

the radicals  $R^3$  and  $R^4$  are selected independently of one another from the group consisting of H, substituted or unsubstituted  $C_6-C_{18}$ -aryl, substituted or unsubstituted  $C_3-C_{18}$ -heteroaryl, substituted or unsubstituted  $C_1-C_{18}$ -alkyl, substituted or unsubstituted  $C_2-C_{18}$ -alkenyl,

substituted or unsubstituted C<sub>2</sub>-C<sub>18</sub>-alkynyl, substituted or  
unsubstituted C<sub>6</sub>-C<sub>18</sub>-aryl-C<sub>1</sub>-C<sub>18</sub>-alkyl, substituted or unsubstituted  
C<sub>3</sub>-C<sub>18</sub>-heteroaryl-C<sub>1</sub>-C<sub>18</sub>-alkyl, substituted or unsubstituted  
C<sub>6</sub>-C<sub>18</sub>-aryl-C<sub>2</sub>-C<sub>18</sub>-alkenyl, substituted or unsubstituted  
C<sub>3</sub>-C<sub>18</sub>-heteroaryl-C<sub>2</sub>-C<sub>18</sub>-alkenyl, substituted or unsubstituted  
C<sub>1</sub>-C<sub>18</sub>-alkoxy-C<sub>1</sub>-C<sub>18</sub>-alkyl, substituted or unsubstituted  
C<sub>1</sub>-C<sub>18</sub>-alkoxy-C<sub>2</sub>-C<sub>18</sub>-alkenyl, substituted or unsubstituted  
C<sub>6</sub>-C<sub>18</sub>-aryloxy-C<sub>1</sub>-C<sub>18</sub>-alkyl, substituted or unsubstituted  
C<sub>6</sub>-C<sub>18</sub>-aryloxy-C<sub>2</sub>-C<sub>18</sub>-alkenyl, substituted or unsubstituted  
C<sub>3</sub>-C<sub>8</sub>-cycloalkyl, substituted or unsubstituted C<sub>3</sub>-C<sub>8</sub>-cycloalkyl  
-C<sub>1</sub>-C<sub>18</sub>-alkyl, and substituted or unsubstituted  
C<sub>3</sub>-C<sub>8</sub>-cycloalkyl-C<sub>2</sub>-C<sub>18</sub>-alkenyl ~~or~~ and

the radicals R<sup>3</sup> and R<sup>4</sup> form, together with the carbon to which  
they are bonded, an unsubstituted or substituted or a heteroatom-  
containing cycloalkylidene and

Nu is OR<sup>5</sup>, SR<sup>5</sup> or NR<sup>6</sup>R<sup>7</sup>, where

the radical R<sup>5</sup> is selected from the group consisting of H,  
substituted or unsubstituted C<sub>1</sub>-C<sub>18</sub>-alkyl, substituted or  
unsubstituted C<sub>2</sub>-C<sub>18</sub>-alkenyl, substituted or unsubstituted  
C<sub>2</sub>-C<sub>18</sub>-alkynyl, substituted or unsubstituted C<sub>6</sub>-C<sub>18</sub>-aryl  
-C<sub>1</sub>-C<sub>18</sub>-alkyl, substituted or unsubstituted C<sub>3</sub>-C<sub>18</sub>-heteroaryl  
-C<sub>1</sub>-C<sub>18</sub>-alkyl, substituted or unsubstituted C<sub>6</sub>-C<sub>18</sub>-aryl

-C<sub>2</sub>-C<sub>18</sub>-alkenyl, substituted or unsubstituted C<sub>3</sub>-C<sub>18</sub>-heteroaryl  
-C<sub>2</sub>-C<sub>18</sub>-alkenyl, and

the radicals R<sup>6</sup> and R<sup>7</sup> are selected independently of one another from the group consisting of H, substituted or unsubstituted C<sub>1</sub>-C<sub>18</sub>-alkyl, substituted or unsubstituted C<sub>2</sub>-C<sub>18</sub>-alkenyl, substituted or unsubstituted C<sub>2</sub>-C<sub>18</sub>-alkynyl, substituted or unsubstituted C<sub>6</sub>-C<sub>18</sub>-aryl, substituted or unsubstituted C<sub>3</sub>-C<sub>18</sub>-heteroaryl, substituted or unsubstituted C<sub>6</sub>-C<sub>18</sub>-aryl -C<sub>1</sub>-C<sub>18</sub>-alkyl, substituted or unsubstituted C<sub>3</sub>-C<sub>18</sub>-heteroaryl -C<sub>1</sub>-C<sub>18</sub>-alkyl, substituted or unsubstituted C<sub>6</sub>-C<sub>18</sub>-aryl -C<sub>2</sub>-C<sub>18</sub>-alkenyl, and substituted or unsubstituted C<sub>3</sub>-C<sub>18</sub>-heteroaryl-C<sub>2</sub>-C<sub>18</sub>-alkenyl

and the radicals R<sup>8</sup> and R<sup>9</sup> are selected independently of one another from the group consisting of substituted or unsubstituted C<sub>6</sub>-C<sub>18</sub>-aryl, substituted or unsubstituted C<sub>3</sub>-C<sub>18</sub>-heteroaryl, substituted or unsubstituted C<sub>1</sub>-C<sub>18</sub>-alkyl, substituted or unsubstituted C<sub>2</sub>-C<sub>18</sub>-alkenyl, substituted or unsubstituted C<sub>2</sub>-C<sub>18</sub>-alkynyl, substituted or unsubstituted C<sub>6</sub>-C<sub>18</sub>-aryl-C<sub>1</sub>-C<sub>18</sub>-alkyl, substituted or unsubstituted C<sub>3</sub>-C<sub>18</sub>-heteroaryl-C<sub>1</sub>-C<sub>18</sub>-alkyl, substituted or unsubstituted C<sub>6</sub>-C<sub>18</sub>-aryl-C<sub>2</sub>-C<sub>18</sub>-alkenyl, substituted or unsubstituted

$C_3-C_{18}$ -heteroaryl- $C_2-C_{18}$ -alkenyl, substituted or unsubstituted  
 $C_1-C_{18}$ -alkoxy- $C_1-C_{18}$ -alkyl, substituted or unsubstituted  $C_1-C_{18}$ -alkoxy  
 $-C_2-C_{18}$ -alkenyl, substituted or unsubstituted  $C_6-C_{18}$ -aryloxy  
 $-C_1-C_{18}$ -alkyl, substituted or unsubstituted  $C_6-C_{18}$ -aryloxy  
 $-C_2-C_{18}$ -alkenyl, substituted or unsubstituted  $C_3-C_8$ -cycloalkyl,  
substituted or unsubstituted  $C_3-C_8$ -cycloalkyl- $C_1-C_{18}$ -alkyl, and  
substituted or unsubstituted  $C_3-C_8$ -cycloalkyl- $C_2-C_{18}$ -alkenyl ~~or~~ and

the radicals  $R^8$  and  $R^9$  form, together with the carbon to  
 which they are bonded, an unsubstituted or substituted or  
 a heteroatom-containing cycloalkylidene, and  
 m and n are, independently of one another, 0 or 1, and

the following applies to the radical  $R^{10}$ :

if m is 0 then the radical  $R^{10}$  is selected from the group  
 consisting of substituted or unsubstituted  $C_1-C_{18}$ -alkyl,  
substituted or unsubstituted  $C_2-C_{18}$ -alkenyl ~~or~~ and substituted or  
unsubstituted  $C_2-C_{18}$ -alkynyl, substituted or unsubstituted  
 $C_6-C_{18}$ -aryl, substituted or unsubstituted  $C_3-C_{18}$ -heteroaryl,  
 substituted or unsubstituted silaalkyl ~~or~~ and substituted or  
unsubstituted silaaryl, and

if m is 1 then the radical  $R^{10}$  is selected from the group  
 consisting of substituted or unsubstituted aryl, substituted or  
 unsubstituted  $C_1-C_{18}$ -alkyl, substituted or unsubstituted

C<sub>2</sub>-C<sub>18</sub>-alkenyl ~~or~~ and substituted or unsubstituted C<sub>2</sub>-C<sub>18</sub>-alkynyl; and

said substituted radical is substituted by a group selected from the group consisting of alkyl, alkenyl, alkynyl, aryl, heteroaryl, hydroxyl, alkoxy, carboxylate, alkoxy carbonyl, amino, nitro, and halo; and

wherein if said radical contain a heteroatom, it is selected from the group consisting of O, N, and S.

Claim 3. (Original).

The process as claimed in claim 1,  
wherein the enzyme with hydrolytic activity is selected from the group consisting of a lipase and an esterase.

Claim 4. (Currently Amended).

The process as claimed in claim 1,  
wherein the enzyme is employed in a manner selected from the group consisting of in solution form ~~directly~~ and in immobilized form.

Claim 5. (Currently Amended).

The process as claimed in claim 1,  
wherein the enzyme to dioxolanone/ or oxathiolanone  
derivative ratio, calculated as molar ratio between enzyme and  
dioxolanone/ or oxathiolanone derivative, is from 1:1,000  
~~1:1000~~ to ~~1:50000000~~ 1:50,000,000.

Claim 6. (Original).

The process as claimed in claim 1,  
wherein the nucleophile is an oxygen-containing nucleophile.

Claim 7. (Original).

The process as claimed in claim 6,  
wherein the oxygen-containing nucleophile is selected from  
the group consisting of a lower unbranched alcohol and water.

Claim 8. (Original).

The process as claimed in claim 7,  
wherein the lower unbranched alcohol is selected from the  
group consisting of methanol and ethanol.



Claim 9. (Original).

The process as claimed in claim 1,  
which is carried out in the presence of a cosolvent.

Claim 10. (Original).

The process as claimed in claim 9,  
wherein the cosolvent is selected from the group consisting  
of aliphatic hydrocarbons, aromatic hydrocarbons, halogenated  
hydrocarbons, ethers, alcohols, esters, acetonitrile and mixtures  
thereof.

Claim 11. (Original).

The process as claimed in claim 1,  
wherein the reaction is carried out at temperatures between  
0 and 75° C.

Claim 12. (Original).

The process as claimed in claim 1,  
wherein the reaction is carried out for between 10 minutes  
and 7 days.

Claim 13. (Currently Amended).

The process as claimed in claim 1,  
wherein the uncleaved enantiomer is isolated by removing ~~the~~  
byproducts of the reaction and ~~the~~ a solvent.

Claim 14. (Original).

The process as claimed in claim 13,  
wherein the byproducts are removed by a manner selected from  
the group consisting of extraction and distillation.